

The importance of transport: more than moving people and things



Prof Simon Kingham
Kaitohutohu Matua Pūtaiao | Chief Science Advisor



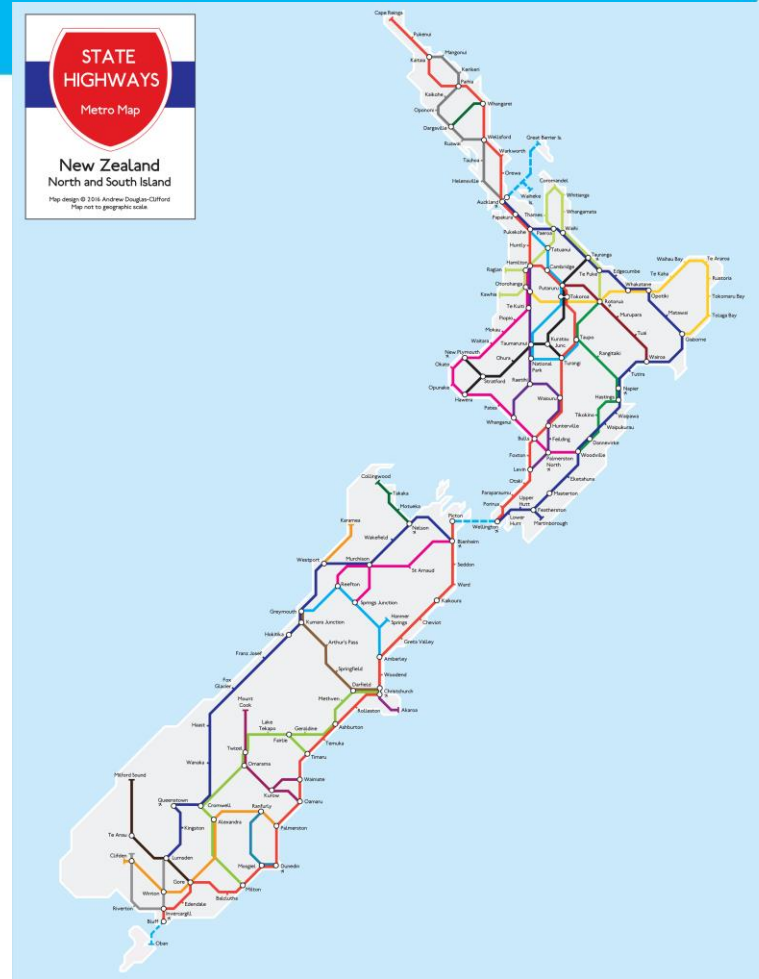
Movement and Access

Movement

- People and things

Access to

- Employment
- Recreation
- Social support
- Health services
- Raw materials
- Products
- Markets



The importance of time and speed



Travel time savings is often/usually central to transport decision making
Time/speed rules!

The importance of time and speed



The idea that the main benefit of improvements to transport infrastructure is the saving of travel time has been central to transport economic analysis. There is, however, little empirical evidence to support this proposition. Indeed, in the long run average travel time is conserved, implying that travellers take the benefit of improvements in the form of additional access to more distant destinations made possible by higher speeds.

Metz D, 2008, The myth of travel time saving. Transport Reviews, 28, 3, 321–336.

www.greaterauckland.org.nz/wp-content/uploads/2009/10/Metz-2008.pdf

The importance of time and speed



17 May 2013 12:00 am | NZ Transport Agency

Motorists travelling the new Christchurch Southern Motorway Stage 1 are saving up to nine minutes in travel time in each direction - for a total time saving of up to 18 minutes a day.

The latest NZ Transport Agency journey surveys have found that motorists using the Christchurch Southern Motorway are saving between four and nine minutes of travel time between Hornby and Lyttelton, despite a 15% increase in traffic volumes on Brougham Street which has added between two to three minutes to travel times along this section of the route.

The NZTA's Canterbury/West Coast State Highway Manager Colin Knaggs says the new motorway, part of Christchurch's Roads of National Significance, is providing a faster and safer route between Brougham Street and Main South Road at all times of the day and in both directions.

"Commuters are saving up to 18 minutes a day in travel time, despite significant increases in traffic volumes on both the motorway and at the city end of Brougham Street, and they can expect even better travel time savings when the second stage of the Christchurch Southern Motorway is completed in 2018/19.

<https://www.nzta.govt.nz/media-releases/new-christchurch-southern-motorway-improves-travel-times/>

Tags

Media releases

Tempers flare over port waiting times

Marta Steeman · 05:00, Apr 02 2013



DON SCOTT / FAIRFAX NZ

LONG WAIT: Trucks line up at the Port of Lyttelton.

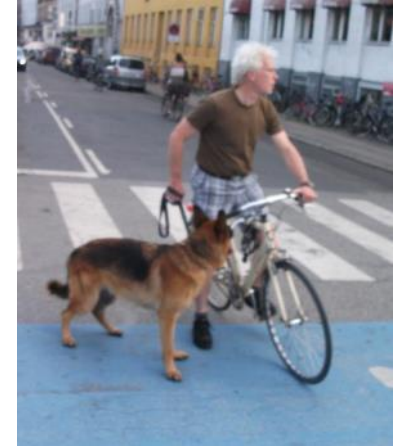
Tensions between truckies and the Lyttelton Port of Christchurch are escalating over long waits to pick up containers.

"There's talk of drivers wanting to do a blockade at the port. That's how bad it is," said a driver who wants to remain unnamed for fear of losing his job.

"We've been waiting anywhere between two to three hours most days."

<http://www.stuff.co.nz/business/industries/8495726/Tempers-flare-over-port-waiting-times>

Good time/bad time



Whose time?



Congestion



- Do we need some congestion?

“the construction of a new road tends to result in a great increase in traffic, not only on the new road but also on the old one which it was built to supersede”

- 1930s, UK Minister of Transport

“better highways only generate more and more traffic until the city becomes a place largely for the movement and storage of cars.”

- 1960s US National Academy of Sciences

“new roads generate new traffic”

- SACTRA (1994) UK govt advisory committee report ***“Trunk Roads and the Generation of Traffic”***

Congestion



- Latent demand released
- Congestion encourages people not to use cars, or not to travel at all (reduced mobility)

“Some congestion is not bad”

- CEO, NZ Ministry of Transport 24/7/07

"In general it shall be assumed that projects do not induce any new trips or cause redistribution to new destinations."

- Transit New Zealand's Economic Evaluation Manual (2007)

Supply and demand



- **Build and they will come**
- **Close it and they go away?**

Supply and demand



Cheonggyecheon, Seoul, Korea



Supply and demand



1970



2005



Supply and demand



1970



2005



Supply and demand



Where did the traffic go?

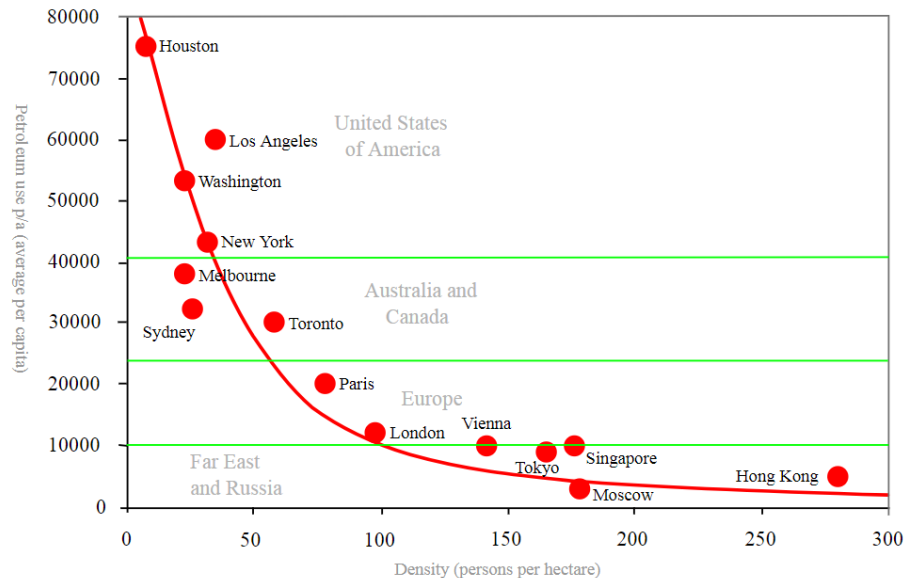


“It just disappeared” - Prof Jeff Kenworthy

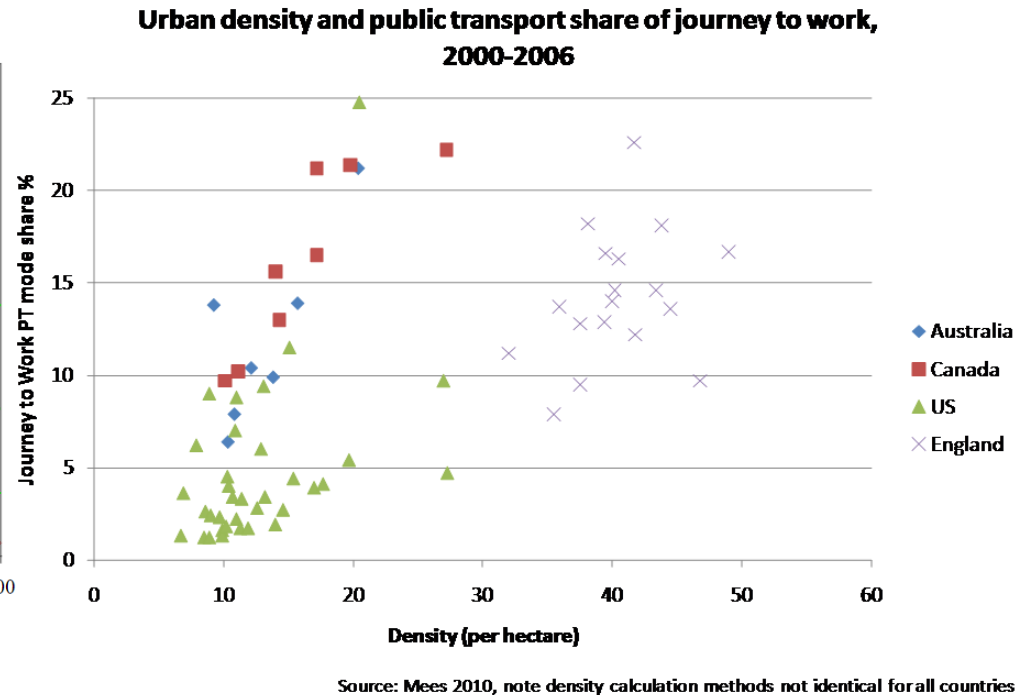
Transport and land use



A commonly used study of 32 cities by Newman & Kenworthy in 1989 concluded that there was a strong link between urban development densities and petroleum consumption.



Annual petroleum use per capita adjusted to US MJ (1980)
 After Andrew Wright Associates, small section taken from 'Towards an Urban Renaissance',
 Urban Task Force Partnership, 1999, © DETR, 1999





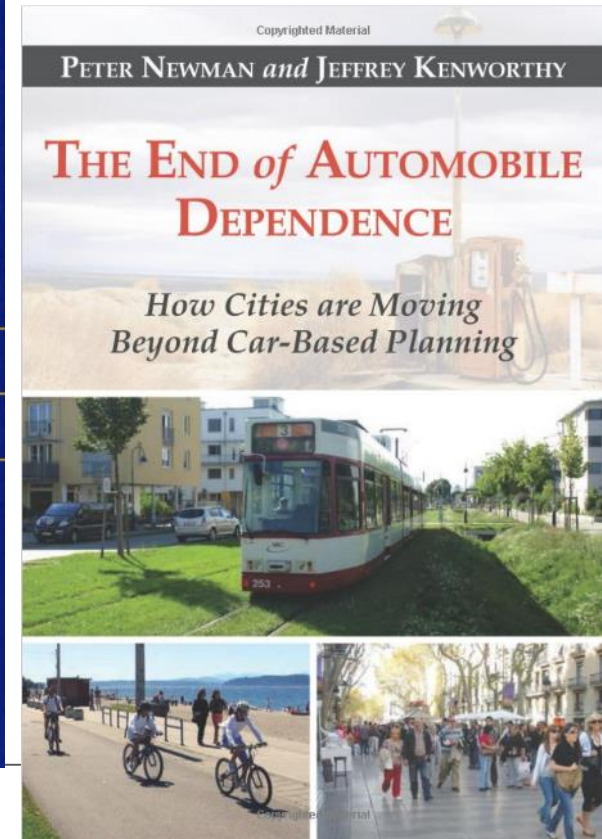
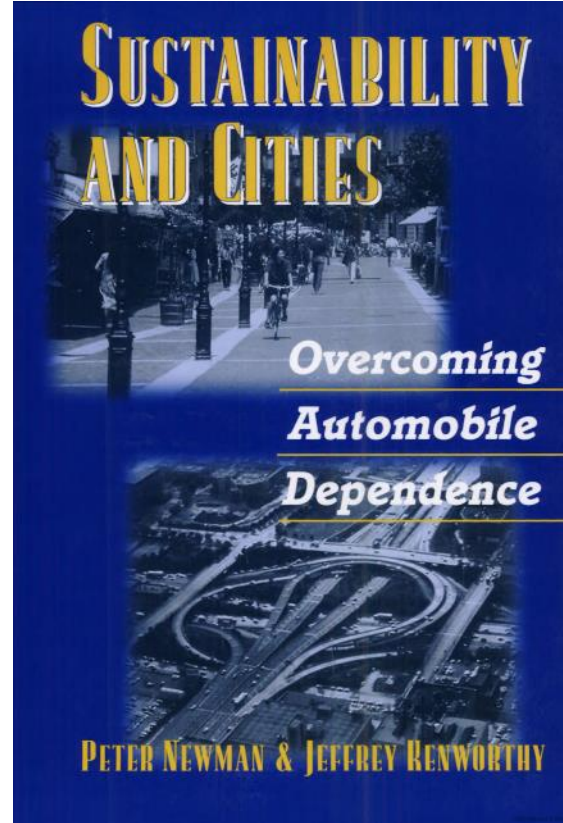
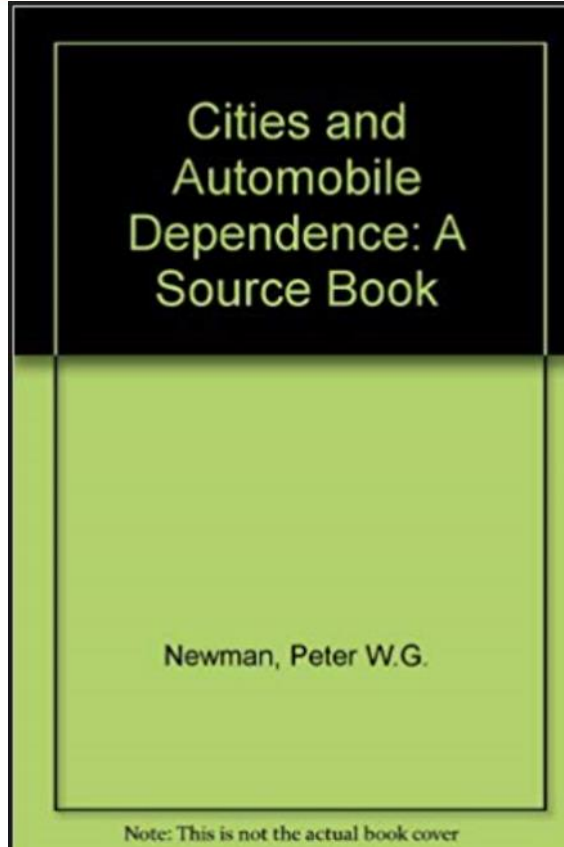
Melbourne



Vancouver



Transport and land use



Environment



Physical environment

- ▶ Air quality incl. exposure
- ▶ Energy and Climate change
- ▶ Congestion

• Built environment

- ▶ Physical and mental health etc

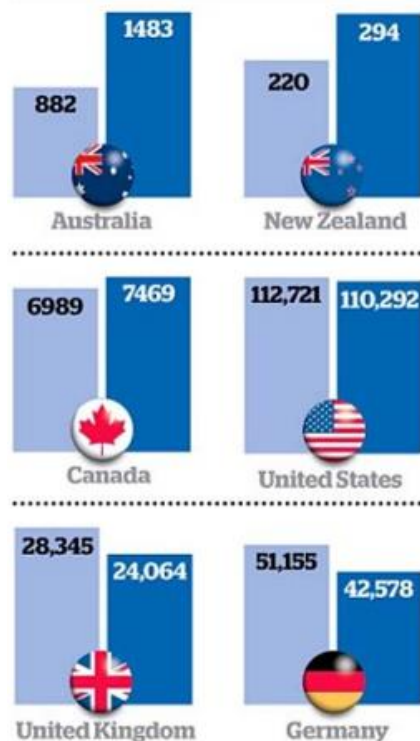


Traffic pollution

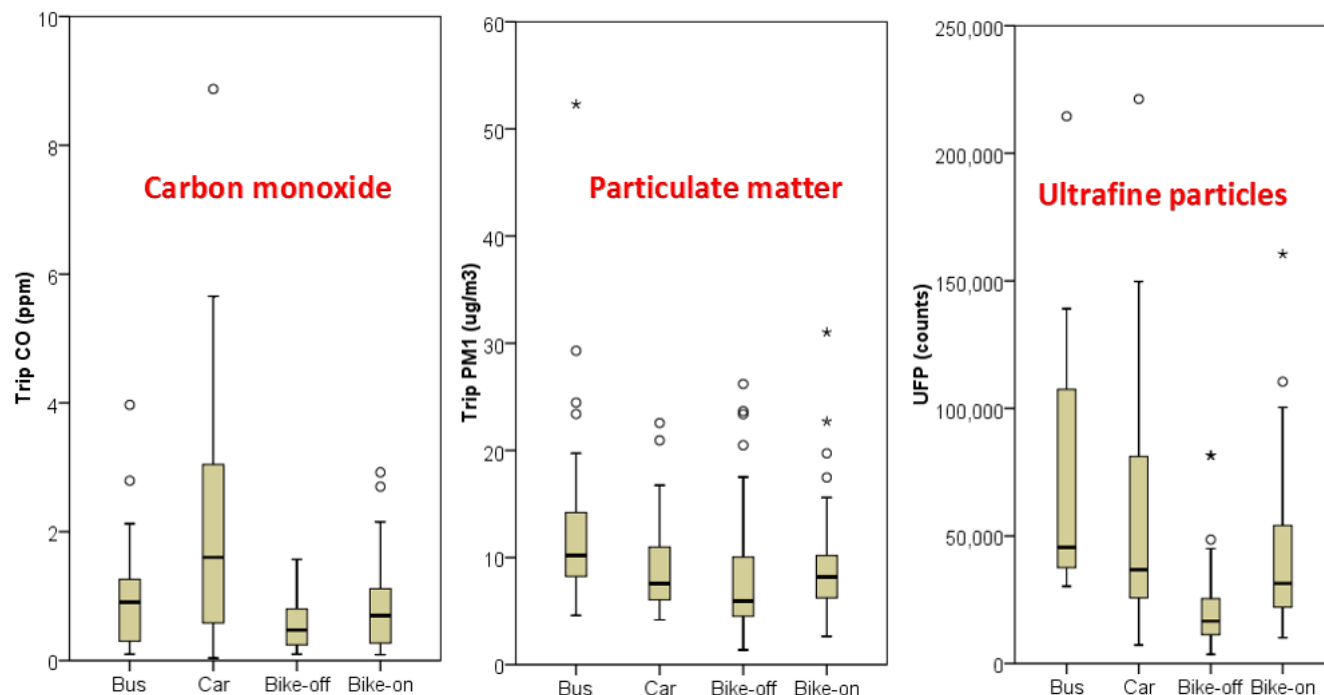


Deaths from air pollution in OECD countries

2005 2010



SOURCE: OECD (2014). THE COST OF AIR POLLUTION: HEALTH IMPACTS OF ROAD TRANSPORT



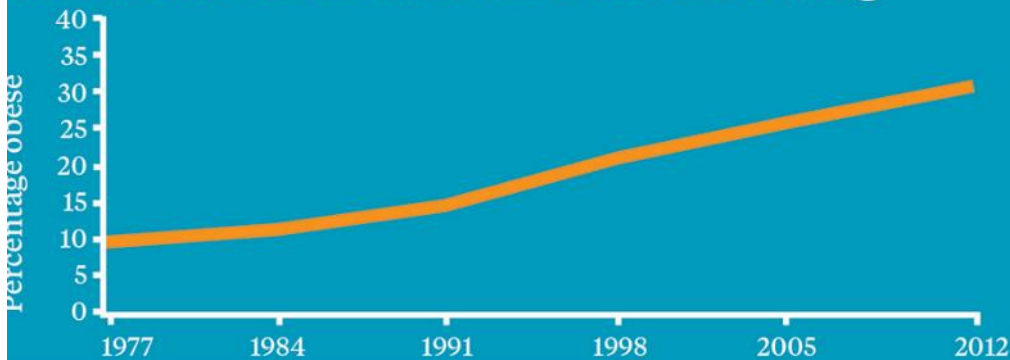
Source: Kingham et al, 2013, Variations in exposure to traffic pollution while travelling by different modes in a low density, less congested city. Environmental Pollution 181, 211-218.

Health and wellbeing



Physical activity

New Zealand has the third highest adult obesity rate in the OECD and our rates are rising



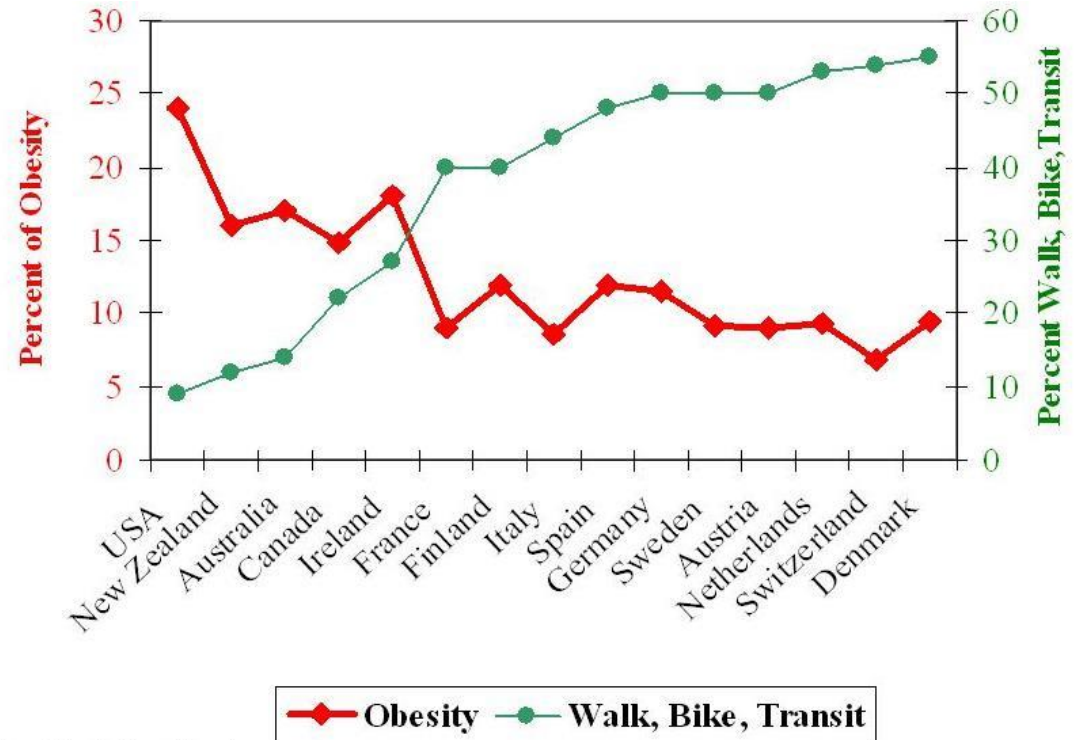
Ministry of Health. 2015. *Understanding Excess Body Weight: New Zealand Health Survey*. Wellington: Ministry of Health.



Obesity and active transport



Active commuters 'have lower BMI'



Credit: John Pucher

Public transport = active transport



"a transit trip involves 1250 steps, required to access and egress the network as well as to transfer between routes or modes [a round trip (2500 steps)] accounts for 25% of the recommended volume of physical activity per day" Canada

Transport Policy 18 (2011) 800–806



ELSEVIER

Contents lists available at ScienceDirect

Transport Policy

journal homepage: www.elsevier.com/locate/tranpol

Walking to transit: An unexpected source of physical activity

Catherine Morency^{b,c,*}, Martin Trépanier^{a,b,c}, Marie Demers^{b,d}

Journal of Transport & Health xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Journal of Transport & Health

journal homepage: www.elsevier.com/locate/jth



ELSEVIER

Preventive Medicine

Volume 99, June 2017, Pages 264–268

Walkability, transit, and body mass index: A panel approach

Michael J. Smart

Analyzing the impact of public transit usage on obesity

Zhaowei She^a, Douglas M. King^b✉, Sheldon H. Jacobson^c



WELL-BEING AUGUST 13, 2010

PRINT

SHARE

Wellbeing Lower Among Workers With Long Commutes

by Steve Crabtree

Back pain, fatigue, worry all increase with time spent commuting



WASHINGTON, D.C. -- American workers with lengthy commutes are more likely to report a range of adverse physical and emotional conditions, leading to lower overall scores on the Gallup-Healthways Well-Being Index.



www.citylab.com/commute/2015/09/drivers-have-the-most-stressful-commutes/406429/

Drivers Have the Most Stressful Commutes

Transit riders and walkers, who avoid the “unexpected delays” of traffic, stack up better in a new survey.

ERIC JAFFE |  @e_jaffe | Sep 21, 2015 |  4 Comments

Transportation Research Part F 34 (2015) 141–151



ELSEVIER

Contents lists available at ScienceDirect

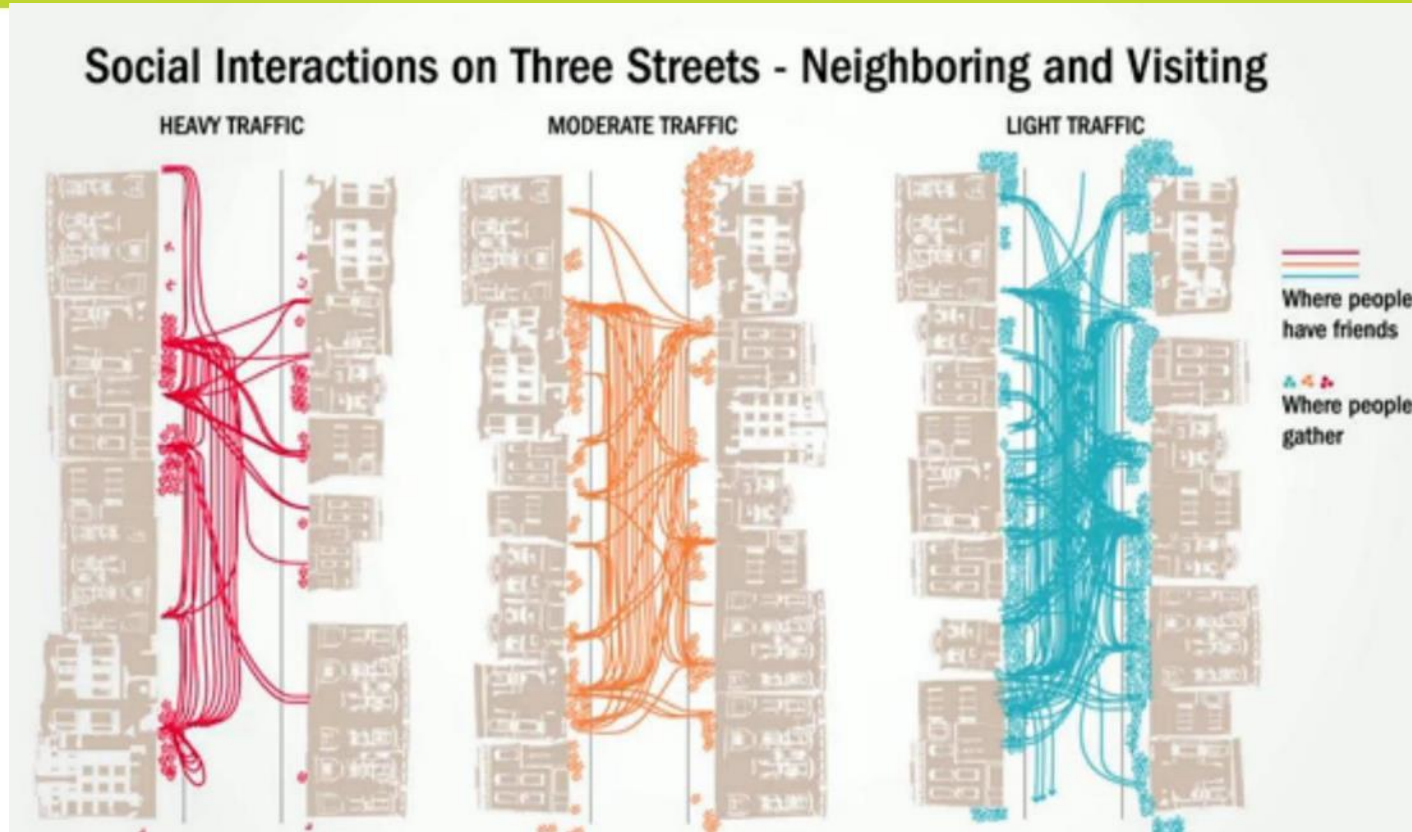
Transportation Research Part F

journal homepage: www.elsevier.com/locate/trf

Am stressed, must travel: The relationship between mode choice and commuting stress

Alexander Legrain^a, Naveen Eluru^b, Ahmed M. El-Geneidy^{a,*}

Traffic and community



Traffic levels: 16,000, 8,000
and 2,000 vehs per day

Figure 1: This image shows how community ties can actually be knit together by a street that is livable and inviting — or torn apart when auto traffic noise, pollution, and threats dominate the street environment.

Neighbourhood Connections



LIGHT (< 500 vpd)



5.1 average connections

"We have great neighbours and live in a safe street"
"I enjoy talking with my neighbours"

MODERATE (1400-2500 vpd)



5.9 average connections

"Most people get out and about and talk on the street"
"Family-orientated and friendly"

HEAVY (8,400-14,000 vpd)



2.1 average connections

"My street is a car thoroughfare"
"Lived here over 35 years, a decline in people talking to neighbours and children playing"

Wiki J, Kingham S and Banwell K, Re-working Appleyard in a low density environment: An exploration of the impacts of motorised traffic volume on street livability in Christchurch, New Zealand. World Transport Policy and Practice Volume 24, 1, 60-68.

Healthy environments



https://www.theguardian.com/society/2017/aug/25/the-obesity-crisis-a-healthy-population-needs-a-healthy-environment

Obesity

The obesity crisis: a healthy population needs a healthy environment

Public Health England is not up to the task, says **Rob Whewey**; we all need to stop eating for winter, says **Cian Foley**; gardening and tai chi can help older people stay fit, says **Louise Ansari**; what priority is the government giving to preserving urban open spaces for pleasant walks, asks **Mark Bryant**



< 126

Letters

Friday 25 August 2017
19.06 BST



Inner-city living makes for ...

https://www.theguardian.com/society/2017/oct/06/inner-city-living-makes-for-healthier-happier-people-study-finds

Housing

Inner-city living makes for healthier, happier people, study finds

Residents of higher-density areas are more active, more socially engaged - and less obese - than people who live in the sprawl of suburbia



< 5273 1,194

Reuters

Friday 6 October 2017
01.13 BST



Busy city centres beat suburban living when it comes to human wellbeing according to a new report.
Photograph: Dominic Lipinski/PA



What can we learn about community from post-earthquake Christchurch

Interviews with residents, leaders, stakeholders

- ▶ Density, Socio-economic status, accessibility, environment, urban form

Results

- ▶ Geography
- ▶ Local leaders
- ▶ Housing stability



Karen Banwell

What we found: streets and travel



Intimate streets – cul-de-sacs, laneways, back sections

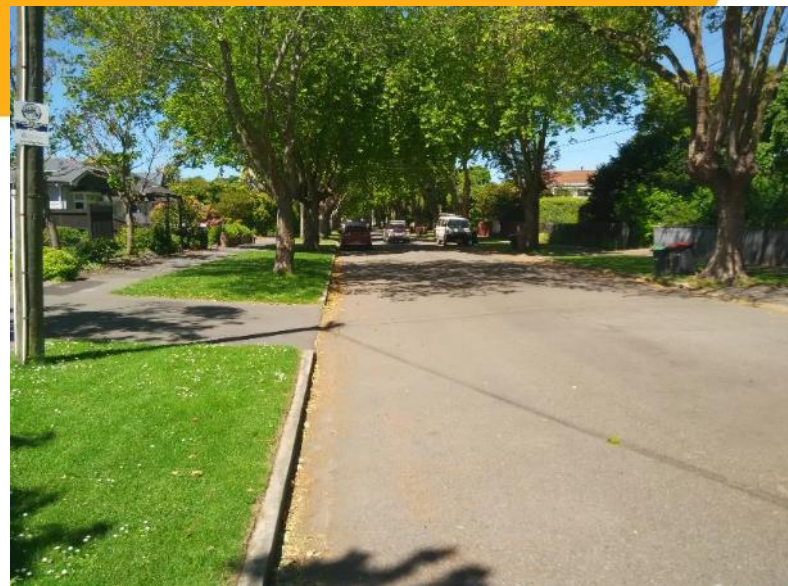
- ▶ *“Our street is wide so we don’t know each other”*
- ▶ *“People get into their cars and go to work and then come home press the little button for their garage door and they go inside to their private spaces never once turning around”*

Walkable – safe, attractive and connected

- ▶ *“Because walking somewhere you see people and that is really important to us to see people and have that eye contact and being human together”*
- ▶ *“It can take a long time to get to the shops unlike the places with fences and garages”*

Green streets – presence of trees

Green streets



Trees

e.g. Christchurch

Proximity and urban design



Local - community hubs, library, pools, parks, recreation areas

- ▶ *“If you have to get in your car it’s not local”*

Bumping places - schools, shops, street furniture

- ▶ *“The school was the only bumping place for Phillipstown and then the Ministry closed it, the constancy in the children’s lives. The Ministry did not see the school as a community hub or the importance for the community”*

Gathering places - churches, pubs, cafes

- ▶ *“It’s hard for people to engage with each other when you don’t have a meeting place to come together”*

Bumping spaces



Vancouver

Bumping spaces

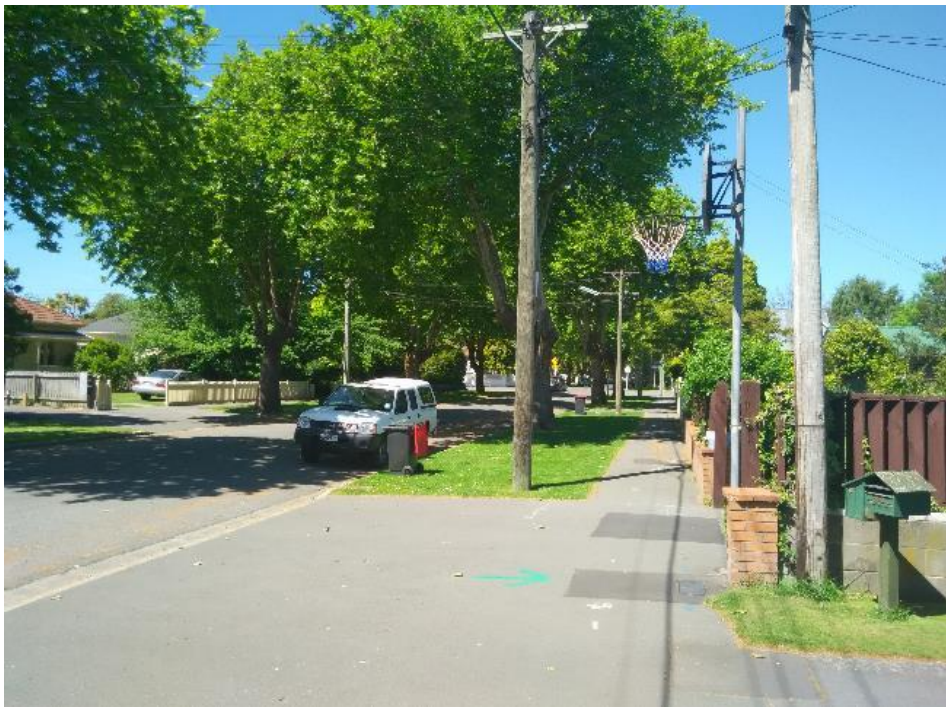


Christchurch (Alan Jamieson)

Bumping spaces / Play spaces



Christchurch



Summary



Transport is more than moving people and things

- drive and shape development
- health and wellbeing
- community

Thanks



Prof Simon Kingham

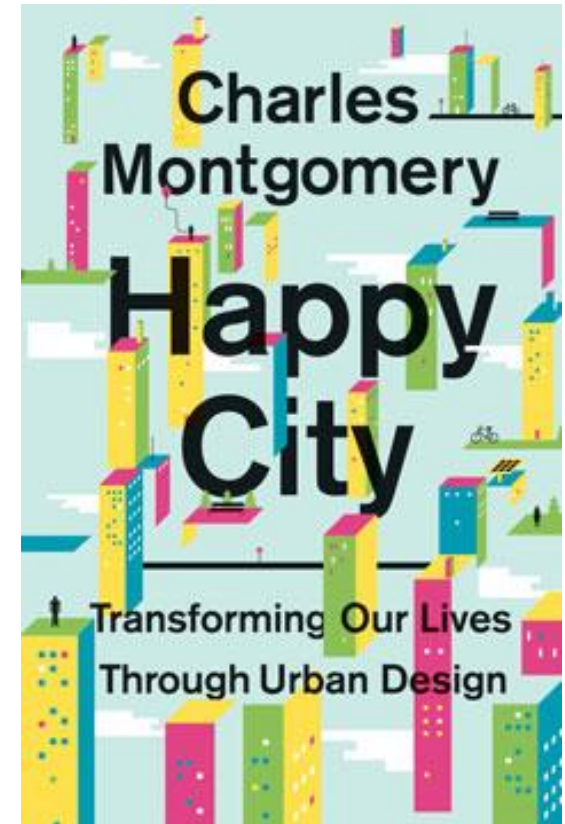
Kaitohutohu Matua Pūtaiao | Chief Science Advisor

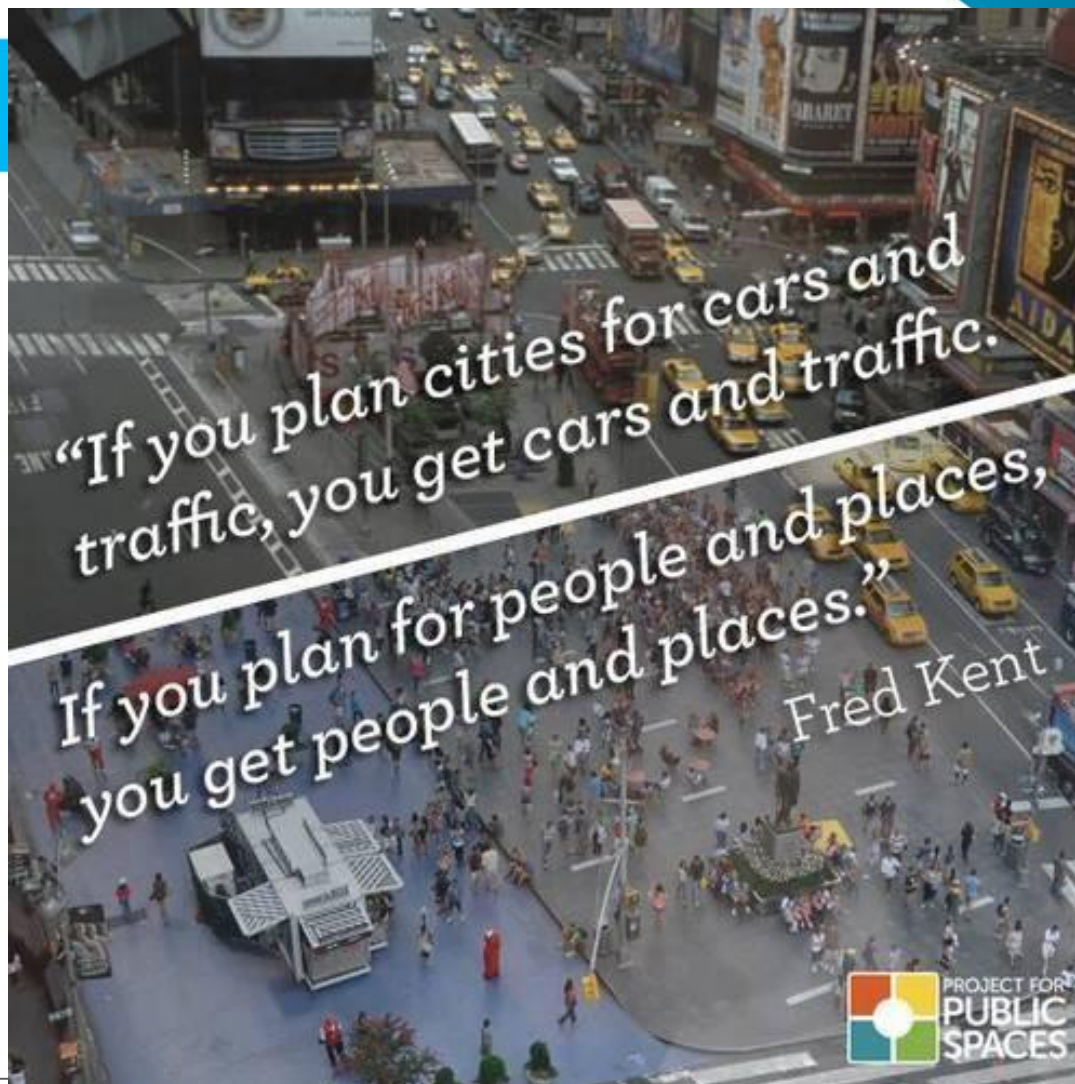
Te Manatū Waka | Ministry of Transport

s.kingham@transport.govt.nz

 @SimonKingham

www.transport.govt.nz





Overall impacts



On average, the estimated health benefits of cycling were substantially larger than the risks relative to car driving for individuals shifting their mode of transport

- de Hartog et al, 2010, Do the health benefits of cycling outweigh the risks? EHP 118, 8, 1109-1116.

The findings, which demonstrate a consistent dose–response for improved function and health, provide strong support for the promotion of cycling for public health

- Oja et al, 2011, Health benefits of cycling: a systematic review. Sc Jnl of Med & Sci in Sports, 21: 496–509

The health benefits of moving from cars to bikes heavily outweigh the costs of injury from road crashes

- Lindsay G, Macmillan A & Woodward A, 2011, Moving urban trips from cars to bicycles: impact on health and emissions. Australian and New Zealand Journal of Public Health, 35: 54–60.